

# NEWEST SCIENTIFIC DISCOVERIES & REMARKABLE FACTS

## Humble ANT With His COW Easily DISPOSSESSES BEE as CLEVEREST of Insect World

THE virtues of the ant are well known to amateur students of natural history, but there has recently been made known a new characteristic that firmly establishes the humble ant as the superior of the "busy little bee." While the bees, with their queen and drones and industrious habits, have been extolled for years, it seems the unassuming little ant has possessed customs which dwarf the industry and ingenuity of the bee.

"Ant cows" have been known to deep scholars in the realm of natural history for some time, but it remained for the department of agriculture to make us all familiar with this striking custom of the ant.

There is a very small member of the animal kingdom commonly referred to as a plant louse. This is the "ant cow." It secretes a sweet liquid of which the ants are very fond and which they collect without injuring the plant lice. And in winter time the ants coolly take these lice into their nests, shelter them throughout the cold months and return them to suitable plants in the spring very much as men are accustomed to feed and shelter cows throughout the winter, putting them to pasture when spring arrives.

This is the only way in which ants can be said to injure plants. They enter houses very rarely and, on the whole, may be said to do no harm of any kind except in so far as they lessen the attractive appearance of the lawn.

On the other hand, it is quite possible that by bringing up from the lower depths sand and earth they may indirectly increase the fertility by forming a top dressing of soil mulch, and at the same time permit better aeration of the earth.

As a whole, ants are declared to be almost harmless, so far as property is concerned. The bureau's bulletin emphasizes the fact that the only harm they do is to render lawns unsightly by their nests. Ants are easy to get rid of.

Where there is only a small area to be covered the simplest method is to drench the nests with boiling water. Another simple remedy is to spray the lawn with kerosene emulsion or with a very strong soap wash prepared by dissolving any common laundry soap in water at the rate of one pound or one-half pound to a gallon of water. Such methods are particularly well adapted to small lawns and for the ordinary little lawn ant.

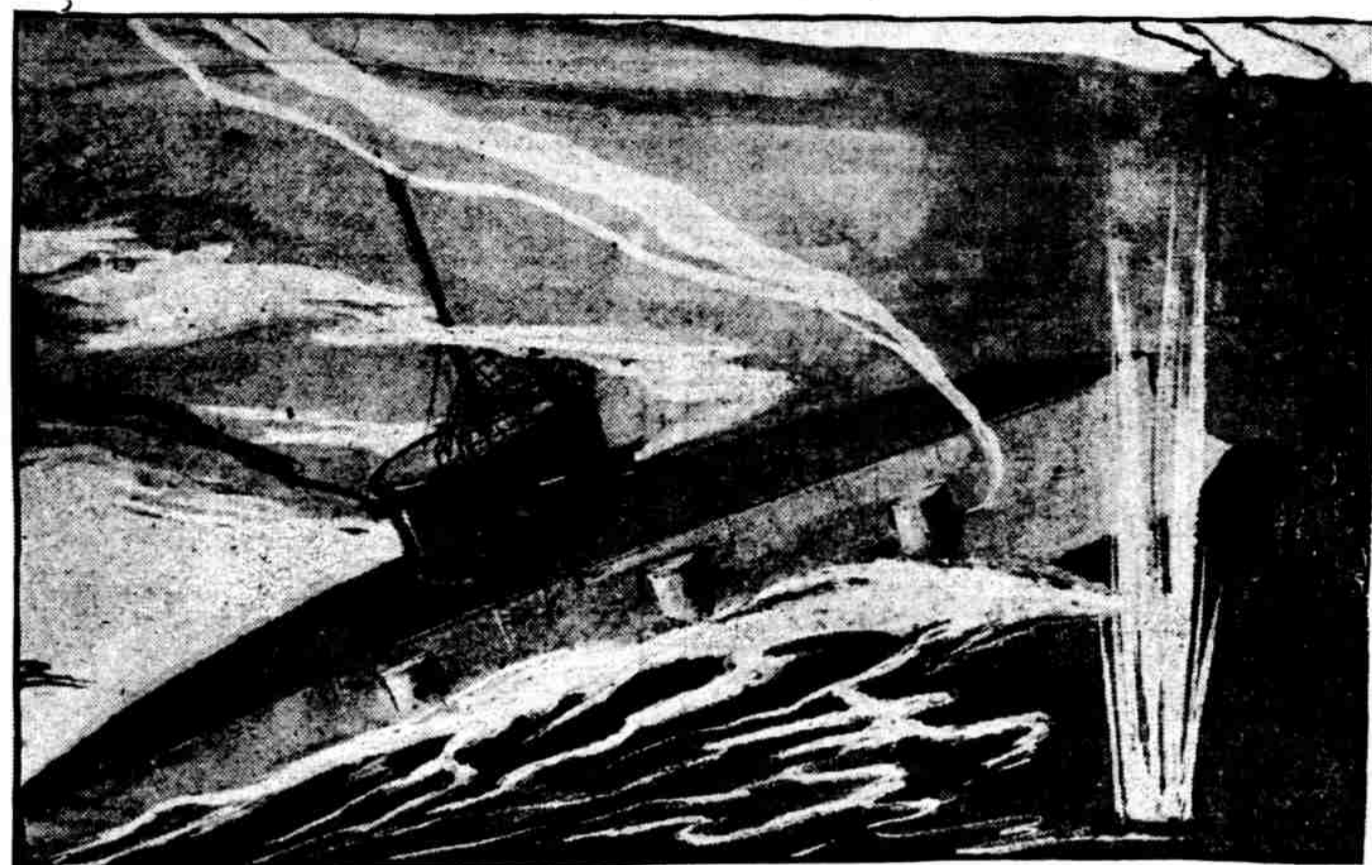
For larger ant colonies or other species, bisulphide of carbon, a chemical which can be purchased at any drug store, will be found effective. This substance can be placed in the nest by means of an oil can or small syringe, the quantity required varying from one-half ounce for a small nest to two or three ounces or more for a large one.

An oil can with a long spout is a convenient instrument, as it can be inserted into the nests and the liquid injected without its being brought close to the operator's nose, for the fumes of bisulphide of carbon, although not poisonous, are nauseating. To facilitate the entrance into the nest of the chemical, the ant hole can be enlarged with a sharp stick or iron rod.

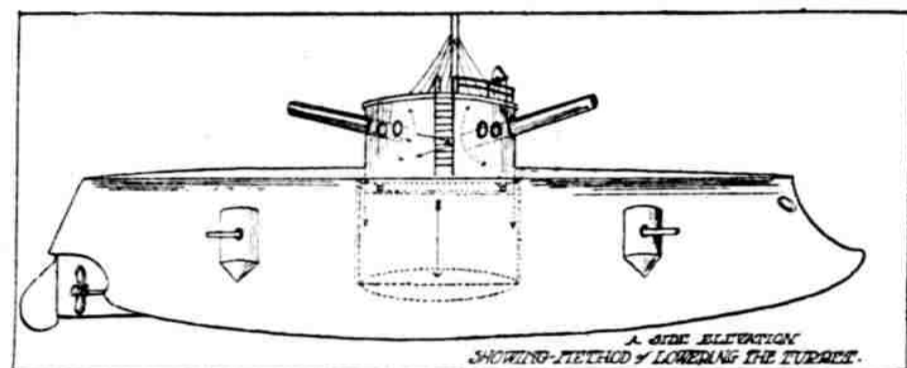
After the bisulphide of carbon has been injected, the opening should be closed by pressure of the foot in order to retain the bisulphide. This will penetrate slowly throughout the underground channels of the nest and kill all the inmates. It is important to remember that while bisulphide is perfectly harmless if kept away from all fire, it is very inflammable and may, under certain circumstances, explode when ignited.

Except from the unsightly appearance of their nests, however, the lawn ants do no appreciable harm. They are frequently noted on roses and on other ornamental and garden plants, and it is naturally supposed they are doing harm to these. As a matter of fact, it is not the plants that attract the ants, but the plant lice.

## Reversion to Monitor Type of Warship Is Proposed by Experienced Inventor



The Lusitania's total length was 762 feet, her engines consisting of four steam turbines of 76,000 horsepower. Her four funnels rose 150 feet above the water, and each of them was large enough to accommodate two tram-cars abreast.



## Inventor Would Have Fast, Light Boat Equipped With Only Two Long Range Guns

MARCH 9, 1862, the "cheese box on a raft," the doughty little Monitor, fired the shot heard around the world and the day of the wooden battle frigate was over. The Monitor revolutionized naval warfare. Every government on the face of the earth that made pretensions to naval prowess beached and docked their wooden warships and began to build ironclads of the Monitor type.

That was fifty-three years ago. Since those days we have had the dreadnought and the superdreadnought, the torpedo boat, the torpedo boat destroyer and the submarine. The submarine cruiser is now in its inception and will be an established fact before many months have passed. In the Queen Elizabeth, the Pennsylvania and the Arizona, the zenith of naval architecture seemingly has been reached.

Comes now C. W. Miller, of North Pittsburgh, an inventor with an imposing array of patents behind his name, to suggest a fighting craft that, in the opinion of disinterested experts who have examined his plans, bids fair to revolutionize all ideas of modern, steel-clad battleships. Profiting from the lessons of the present war, in brief Mr. Miller would build a vessel costing one-third that of the modern superdreadnought, having greater speed, one revolving turret, two or four sixteen or eighteen-inch guns and little steel plate. In other words, his ship would be designed solely for speed and gun range. He argues that two twenty-mile guns could outfight anything else afloat, because the ship's speed would enable it to pick its own range, escape if worsted and at the same time throw enormous shells into an opponent not even visible from the decks.

The Miller craft would be a combination of the battle cruiser and the old-type monitor. Keeping out of range of an enemy fleet, only poor marksmanship would prevent it from picking off the foe's boats and sinking them one at a time. With a speed of twenty-eight to thirty-five knots, easily possible because of the boat's lightness and great engine capacity, it could, with its big guns, sink the enemy without itself being exposed to the fourteen and fifteen-inch guns now placed on dreadnoughts.

The one turret would be revolving and disappearing. Hydraulic pressure would raise and lower the turret, as it would the bridge, or conning tower. With the turret lowered, the Miller craft would present to the enemy only the bare surface of its deck. The guns would disappear within the turret.

With Diesel engines for power and oil for fuel, Mr. Miller figures that the ship could carry enough fuel to take it around the world. With only one turret, the space available for fuel, engines and other machinery would be ample.

As the inventor points out, such a craft would not be for joy riding, but for fighting and running. It would be a solid, substantial, efficient fighting machine and nothing else.

A few small guns, projecting from side turrets, would serve to keep off the attacks of small craft. With six five-inch guns on each side, the Miller craft would keep torpedo boats and submarines away. The two sixteen or eighteen-inch guns would be reserved for long range fighting.

"The officers' quarters could be on the deck above, though ordinarily there would be room enough below. A ship under this design should not be littered with a lot of material so that an attacking shell would wound the whole crew if it did not kill them," says Mr. Miller.

"Summing up the advantages of such design I point out that there would be: 'At least a 50 per cent lowering in cost and possibly more saving than that.'

"A corresponding saving in time of construction.

"Less room required for fuel and greater efficiency of fuel application.

"A considerable reduction in the number of men required to man the boat, therefore, a lower cost of operation, provisioning, etc.

"A greater elasticity of action owing to speed and lightness of craft.

"A gun range of such character as to eliminate the necessity of huge batteries of guns of lower efficiency and the effectiveness of which is quadrupled by the revolving turret method of installation.

"Comparative immunity from attack and disablement is not at the present time obtained under modern methods of construction, but is manifestly available by the disappearing turret and conning tower application."

## Gas Masks for London Citizens!

ALTHOUGH London has gotten over a great part of its former fear of Zeppelins, the advent of poisonous gases into warfare has added a new terror to raids. London is prepared for a raid from Zeppelins armed with poisonous gas bombs and every precaution is being taken.

The populace is being educated through the journals and newspapers what to do in case of aerial attack by poison bombs. Full page advertisements are being run offering for sale special masks that are guaranteed to protect the wearers from the effects of the gas bombs and articles

are published explaining how to make masks that will ward off the deadly fumes.

The masks are offered at two shillings, or fifty cents. Householders are advised through the public prints that bath towels soaked in a ten per cent solution of common washing soda make an effective protection against the gas. Dish cloths and sponges can also be made to serve as protection, these articles point out.

Besides that, citizens are warned, in case of falling gas bombs, to keep their eyes tightly closed and to breathe slowly, inwards through the mouth and outwards through the nose.

## Pitldown Skull Shows Great Age of Monster Man in British Isles

THAT primeval man inhabited the British Isles before they were separated from Europe is the conclusion reached by English scientists after searching studies of the remains of the "Pitldown man," that invaluable human relic discovered in the gravel bed of the Weald of Sussex less than three years ago. "The Pitldown skull," so called because of the town near which it was found, has proved the connecting link between man as he is today and our monster-like ancestors.

The "Pitldown skull" and other remains of prehistoric man's existence in England long before history as it is known to us began to be recorded have been collected in the Natural History Museum at South Kensington, England. Scientists have tracked down that most wonderful of all stories, the origin of man, with far greater skill than any modern Sherlock Holmes could out a crime. Dr. Smith Woodward has prepared a guide to this part of the museum and gives a fascinating description of how the oldest of all human relics was discovered and the conclusions reached by the scientists from the discovery.

"True, man, though of very low degree, had certainly reached Europe by the end of the pleistocene period. He had even spread so far as the southern part of England—then united with the continent—as proved by the discovery of portions of a remarkable skull and lower jaw in a river gravel at Pitldown, near Fletching, almost midway between Crowborough and Lewes, in the Weald of Sussex. The discovery was made in 1912 by Mr. Charles Dawson, and the remains were presented to the museum in 1913 by himself and the lord of the manor, Mr. C. M. Maryon-Wilson.

"The Pitldown gravel had attracted the attention of Mr. Dawson for some time, because he had noticed in its numerous peculiar flints from the chalk, which could not have been carried to the spot by any existing stream. The nearest water course is the River Ouse, which has cut a valley eighty feet deep since the gravel in question was deposited, and this river at present has no source in the chalk. The geography of the region, in fact, has completely changed, and the Pitldown gravel may have been left not even by the Ouse, but by some river that has disappeared. It is therefore an unusually old river gravel preserved by accident and any fossil that remains in it must naturally be of special interest.

"This discovery of the gravel of an ancient river bed must be taken as the first link in the great detective story. The next link came when workmen began to dig up the gravel for use on roads. They dug up a human skull, broke it up and threw it away.

"One fragment was fortunately preserved and given to Mr. Dawson, who recognized its importance and once began a search for the remainder of the specimen. Enough pieces were recovered to show the essential peculiarities of the skull. Part of the lower jaw and the lower canine teeth eventually were found in the adjacent undisturbed gravel, and both implements of human workmanship and fragmentary remains of animals also were met with."

From the moment of the discovery the best brains of the world have been at work on these fragments. Physicians saw that it had no trace of disease, and therefore presented a fair specimen of the brain of man of those far off days. Anthropologists measured the skull and wondered at its thickness and biologists worked out the capacity of the huge brain that must have been inside it. Later on morphologists discovered a connection between the hideous apelike canine teeth and the milk teeth of a modern child.

Dr. Woodward gives as part of his conclusions from the investigation of all the remains stored up in the museum: "Man, having a skeleton identical with the existing one, has lived in western Europe for a long period, during great changes of climate, much alteration of geographical contour and the drying out of numerous wild quadrupeds. He was here long before the British Isles were separated from the mainland of Europe. His immediate predecessor was a form of man (Neanderthal or Monsterial), which more nearly resembles the apes."

"Still earlier Heidelberg man, though with typically human teeth, had a much more retreating bony chin, suggestive of a closer relationship with the apes. Finally Pitldown man, which is at least as old as the Heidelberg race, and probably older, had both lower jaw and front teeth as nearly on the ape pattern as was compatible with their working on a human skull of normal width."

Although the facts are still scanty it is evident that the further human remains are traced back in geological time the more marks they retain of an apelike ancestry. They suggest a gradual approach to a primitive forest animal with an overgrown brain, which was destined to begin a fundamentally new departure in organic evolution."

## Human Ear Valued at One-Third of Eye

THE value of a human ear has been judicially determined as one-third that of an eye. The momentous decision was made by a New Jersey judge in a suit for personal damages. A workman who had lost the hearing of one ear sued his employers, who contested the case on the ground the New Jersey compensation law made no provision for loss of hearing. The judge decided, however, that the loss of hearing in one ear was tantamount to the loss of the sight in one eye and awarded the workman \$333.33.

## Tuberculosis Remedy Costs Life of Heroic Physician

CUPROCYANIDE of potassium as a remedy for tuberculosis has been used successfully by a Japanese physician, Dr. Genzaburo Koga, but experimental work first cost the life of another Japanese doctor who volunteered to submit himself for the purpose.

Dr. Koga is using his specific in two Tokyo hospitals, the demand for the new remedy having been so great that one institution was found inadequate. The specific has been found efficacious in both the first and second stages of tuberculosis, but the weakness of the patients prevents it from acting successfully in the last stages of consumption. The potassium cuprocyanide does not act directly by itself on the bacteria, but combines with an ingredient x contained in the tubercular tissue. The compound thus produced has proved its effectiveness. When the case is too far advanced and the patient becomes exhausted the supply of x disappears. Then not only does the potassium cuprocyanide fail to achieve the effect intended, but its use implies some danger to the frail constitution of the patient, who is unable to resist the remedy's reaction.

In the case of Dr. Motojima, who sacrificed his life to advance experimentation with the new remedy, the specific was unable to save him because of the advanced stage of the disease. Then, too, it is probable that the mistake made in the first experiments with the remedy hastened rather than retarded the progress of the disease. Dr. Koga realized this and when finally he had perfected

the specific it was too late to save his heroic comrade's life.

Dr. Koga at first refused to accept the offer of his body made by Dr. Motojima. While Dr. Koga was working in the medical laboratory of the Kyoto university, Dr. Uemura, a physician who was leaving shortly for Hawaii, visited him and Dr. Koga told of his researches and the partial results he had achieved. Arriving at Honolulu, Dr. Uemura chanced to speak of the labor of Dr. Koga in his search for a tuberculosis specific and of the degree of success he already had attained to Dr. Motojima, a physician in the charity hospital of the Japanese society at Honolulu. Dr. Motojima at once said he would offer himself to Dr. Koga for purposes of experimentation, and resigning his position in the hospital sailed for Japan.

When the young physician—he was thirty-six years old—told Dr. Koga of the purpose of his visit the scientist at first declined the offer, saying that he was not sufficiently confident in the treatment to warrant his trying it on a human subject. Dr. Motojima retorted that his body was nothing as compared with the ends for which Dr. Koga was working and rebuked Dr. Koga for his weakness of faith in himself, adding that a human patient was better suited than rabbits and frogs to supply the investigator with reliable data.

Dr. Koga, moved by the younger man's earnestness, at last accepted his offer and began his experiments. Through these experiments he learned of the effect of his injection on the human body, particularly with regard to the injurious effects of overdoses.

Dr. Koga moved to Tokyo in January, 1914, and continued his work in the laboratory of Dr. Kitazato. Dr. Motojima accompanied Dr. Koga to Tokyo and the experiments were continued. But the subject's tuberculosis had been steadily advancing and his condition daily was more serious.

In September of last year Dr. Koga for the first time achieved satisfactory results in his experiments and at once went to the patient and told him of his success, expressing regret for the unavoidable errors of the past and saying that he had found the cure. But the discovery came too late to help the man who had given himself over for experimentation and Dr. Motojima died in the Negishi hospital, Yokohama, within the month. Two months later Dr. Koga had brought his treatment to a point at which he was convinced of its usefulness, and the medical authorities sharing his conviction he was permitted to use the treatment in general practice. Dr. Kitazato characterized the treatment as the most efficacious anti-tuberculosis specific so far discovered.

Dr. Koga tried the perfected treatment on ten patients with success and up to date it has been given to more than 300 patients in the Kitazato laboratory and the Negishi hospital with noteworthy results. The scientist now expresses the hope that other scientists will take up the work and develop it on the foundation which he has laid.

The raw material for the manufacture of the remedy is abundant in Japan and is sufficient to meet any demand which may arise.

## Chain of Radio Stations and Planes for Coast Defense!

JOHN HAYS HAMMOND, JR., the radio expert, has submitted to the Aero Club of America a detailed plan to provide for coast defense, aeroplanes equipped with wireless and a chain of radio stations, which will make it possible, with thirty-three aeroplanes and the same number of radio stations, to provide protection to the Atlantic and Pacific coasts and the Mexican border.

Mr. Hammond is a member of the club, and being deeply interested in providing adequate national defense, offered to co-operate in developing the club's plans to provide aviation corps for national guard and naval militia of each state.

In his proposal to the governors of the aero club to extend the efficiency of aeroplanes for coast defense by the application of the radio systems to aeroplanes, Mr. Hammond says:

"As chairman of the subcommittee of the Langley aerodynamical committee, I am much interested in the application of radio systems to aeroplanes. I believe that the combination of these two branches of science will prove invaluable as adjuncts in the protection of our country. With the Congressional apathy existing in matters of national defense, it is necessary that we apply directly to our citizens to stimulate action in this matter. With our extensive coast line and our limited and low-speed navy, it is essential that our scouting facilities be extraordinarily efficient.

"With a well-organized scout system to cover our coast line, our fleet and land forces could co-operate with greater unity against the enemy in its landing operations. The intent of the enemy's maneuvers and his ultimate objective could only be ascertained by aerial information, and with adequate information the limited force which the nation possesses could be used to its best advantage. I take the liberty of suggesting,

therefore, a rough plan of action in the organization of a system for patrolling our coast which would eliminate the possibility of a surprise attack on any particular section of our coastal territory.

"On the northeastern division of our coast line I would have five acres of fifty-mile radius constituting the patrol areas for five aero scouts. In the center (approximately) of each area would be a radio receiving station connected with land lines. Each aero scout is equipped with a radio transmitter of sixty miles' daylight radius. Each scout is in constant communication with his central radio station, and each station is directly connected by phone or telegraph with the existing land system. The movement of ships, their disposition and the strategy of the enemy will be readily discovered with the information obtained from scouts covering such an extended front. An intelligent understanding of the enemy's purpose would be gained and our forces could be concentrated at decisive points to meet the invader.

"From New York to Mt. Desert five areas would be located. From New York to the Mexican border seventeen areas would be established, and on the Pacific coast there would be eleven more. It would be necessary, therefore, for the complete organization to have 33 aero scouts to cover the entire coast line of the United States. In war, however, it is likely that if a single nation were the enemy, that only one coast need be actively guarded, in which case the balance of the scouts form a valuable reserve.

"It is obvious that a number of existing radio stations could be used in this work, and also existing buildings for receiving stations."

The governors of the aero club consider Mr. Hammond's proposal of great importance. The proposal will be submitted to the heads of the national guard and naval militia of the states who are co-operating with the club in developing aviation corps for the national guard and naval militia.

The latest, and, to date, the most substantial contribution to the Aero Club of America's national aeroplane fund is a \$7,500 Curtiss flying boat, of the same type as used in the United States navy,

and a thorough course of training for both a pilot and a mechanic.

This donation comes from the Curtiss Aeroplane Company, of Buffalo, N. Y. Mr. Glen H. Curtiss, the president of the company, in a letter commending the movement to develop aviation corps for the national guard and naval militia of every state in the Union, says:

"We are heartily in favor of this movement and will do whatever we can to assist in its development. We shall be glad to present to the naval militia of New York state, through the Aero Club of America, a flying boat, and will train an aviator and a mechanic."

Commodore R. P. Forshaw, commanding officer of the naval militia of New York state, with headquarters on the U. S. S. Granite State, has been advised by the Aero Club of America of the offer. Commodore Forshaw will decide to which of the three battalions of the New York naval militia the flying boat will be assigned.

At present there are no aeroplanes in the naval militia of any state. Last February the navy department requested the commanders of the naval militia of the states having such organizations to create aviation corps.

The commanders appealed for volunteers, and in some cases were successful in securing the services of aviators with aeronautical experience. Commander Charles L. Poor, first battalion, New York naval militia, appealed to the Aero Club of America and secured the services of two members, Messrs. William Fitzhugh Whitehouse and Harold H. Brown, both of whom are trained aviators.

But the navy department could not supply the aeroplanes, and as there were no prospects of obtaining aeroplanes for either the national guard or naval militia the Aero Club of America and its affiliated aero clubs started a public subscription, similar to the French and German subscriptions of 1912-13, to raise a fund with which to develop aviation corps for the national guard and naval militia of all the states, and being about the utilization of 100 aeroplanes for mail carrying, forming an aeronautical reserve which, while being used daily for peaceful purposes, shall be ready for military service in case of need. Nearly \$7,000 has been raised for this purpose.